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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

REPLY BRIEF FOR THE APPELLANTS

Ex parte MARUYAMA et al.

WAFER AND EPITAXIAL WAFER, AND MANUFACTURING PROCESSES
THEREFOR

Serial Number: 09/856,139
Filed: May 29, 2001
Appeal No.:
Group Art Unit: 2814
Examiner: A. Mai

Submitted herewith is a Reply Brief. In the event that there may be any fees due with respect to the filing of this paper, please charge Deposit Account No. 01-2300, referencing docket number 107242-00017.

Respectfully submitted,

Robert K. Carpenter
Attorney for Appellants
Registration No. 34,794

Customer No. 004372
ARENT FOX, PLLC
1050 Connecticut Avenue, N.W., Suite 400
Washington, D.C. 20036-5339
Tel: (202) 857-6000
Fax: (202) 638-4810
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THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Appellants:

Confirmation No.: 3293

Fumiaki MARUYAMA et al.

Group Art Unit: 2814

Application No.: 09/856,139

Examiner: A. Mai

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For: WAFER AND EPITAXIAL WAFER, AND MANUFACTURING PROCESSES
THEREFOR

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Date: May 27, 2005

I. INTRODUCTION

The Appellants have received the Examiner's Answer dated March 29, 2005, in the above-referenced appeal. Pursuant to 37 C.F.R. § 41.41 and MPEP § 1208.03, Appellants respectfully submit this Reply Brief.

II. SUMMARY

This paper is submitted as part of an appeal from the rejection set forth in the final Office Action

III. ISSUES IN REPLY BRIEF

Appellants first take this opportunity to correct an error in the Appeal Brief regarding the name of the real party in interest. The correct real party in interest is

Shin-Etsu Handotai Co., Ltd. Appellants respectfully request that the record be corrected accordingly.

Claims 67 and 69 stand rejected under 35 U.S.C. 102(e) as being anticipated by Kobayashi et al. (U.S. Patent No. 5,997,598). Claim 68 stands rejected under 35 U.S.C. 103(a) as being obvious over Kobayashi et al. in view of Johnson (U.S. Patent No. 6,102,977). Claim 70 stands rejected under 35 U.S.C. 103(a) as being obvious over Kobayashi et al. in view of "Appellant Admitted Prior Art" (referred to hereinafter "AAPA"). Claims 71-77 stand rejected under 35 U.S.C. 103(a) as being obvious over Kobayashi et al. in view of Mitani et al. (U.S. Patent No. 5,804,494) in view of AAPA.

Appellants respectfully submit that the invention defined by present claims 67 and 69 is not anticipated because no prior art reference has each and every feature set forth in these claims. Appellants further respectfully submit that the Examiner has not made proper *prima facie* rejections of claims 71-77 under 35 U.S.C. § 103(a), because the prior art references cited fail to teach or suggest each and every feature set forth in these claims.

The present claims require, inter alia, "[c]lean room air conditioning facilities comprising an air conditioner having **a boron-less filter and a boron adsorbing filter**; and one or more wafer treatment apparatuses each having a boron-less filter" (see claim 1, emphasis added). The atmosphere gas is recycled between the air conditioner, the clean room and the wafer treatment apparatuses.

The Examiner asserts that Kobayashi et al. teach a clean room air condition facility including "an air conditioner having a boron-less filter and a boron adsorbing filter (ULPA filter)" page 3 of the Examiner's Answer.

As explained in Kobayashi et al., “ULPA (abbreviation for Ultra Low Penetration Air)...are excellent filters in view of removal of dusts and, for example, ULPA filters can remove fine particles even of 0.1 μ m” (Kobayashi et al. column 1, lines 19-24).

However, Kobayashi et al. nowhere teach (or suggest) that the ULPA filter is a “boron adsorbing filter,” as required by the present claims. In particular, “a boron adsorbing filter” is defined as “a filter which adsorbs boron therein” (present specification page 9, lines 1-2). As further explained in the present specification, the “ULPA filter has no function to remove boron” (present specification page 8, lines 17-18). Thus, while the ULPA filter of Kobayashi et al. can trap particles, the Kobayashi et al. ULPA filter has no function to adsorb boron.

Thus, as Kobayashi et al. nowhere teaches or suggests the inclusion of “a boron adsorbing filter,” as required by the present claims, Appellants respectfully submit that the present claims are not anticipated by and would not have been obvious over Kobayashi et al. for this reason.

Additionally, the Kobayashi et al. ULPA filter is not “boron-less.” As the Examiner has noted, the present specification refers to a boron-less filter as being “an air filter from which no boron is released” (see page 8, line 25 to page 9, line 1 of the present specification. The Examiner thus asserts that Kobayashi et al. teaches a boron-less filter since there is no measurable boron in the local facilities described in Kobayashi et al.

However, the boron-containing filters of Kobayashi et al. are not air filters from which no boron is released and the Examiner’s assertion is incorrect. In particular, Kobayashi et al. shows in Table 6 that facilities No. 31 and No. 32 have the same main

filter ULPA filter medium, namely “Glass fiber (1).” Similarly, Kobayashi et al. shows in Table 6 that facilities No. 33 and No. 34 have the same main filter ULPA filter medium, namely “Glass fiber (3).”

It is clear from the data that both of the ULPA filter mediums “Glass fiber (1)” [facilities No. 31 and 32] and “Glass fiber (2)” [facilities Nos. 33 and 34] are not boron-less filters since Kobayashi et al. specifically teach that each releases boron. In particular, Kobayashi et al. clearly state that **“the local facilities of Nos. 32 [Glass fiber (1)] and 34 [Glass fiber (2)]** corresponding to the comparative examples of the [Kobayashi et al.] invention are **not desired**, since either the organic phosphorus compounds or the **boron compounds are present in the air** at the inside of the local facilities and there [is] a worry of causing unnecessary doping for the local facility used in the semiconductor production” (Kobayashi et al. column 16, lines 2-10, emphasis added). Thus, Kobayashi et al. clearly discloses that both the “Glass fiber (1)” and the “Glass fiber (3)” can release boron compounds.

Accordingly, the Kobayashi et al. ULPA filters are not “boron-less” and the present invention as claimed, which requires “boron-less” filters is not anticipated and would not have been obvious to a person of ordinary skill in the art at the time the invention was made in view of Kobayashi.

The asserted AAPA is applied to show that boron can attach on a surface of a silicon wafer. Mitani et al. is applied to show the boron concentration in a silicon wafer. Johnson is applied only to show an outside air handler. Thus, AAPA, Mitani et al., and Johnson fail to make up for the deficiencies in Kobayashi et al.

For at least the above reasons, claims 67-77, all of which require "[c]lean room air conditioning facilities comprising an air conditioner having **a boron-less filter and a boron adsorbing filter**," are patentable over Kobayashi et al. alone, or in any combination with the AAPA and/or Mitani et al. and/or Johnson. Appellants respectfully submit that the references, alone or in any combination, fail to teach or suggest the invention of present claims 67-77.

For all of the above-noted reasons, it is strongly contended that clear differences exist between the present invention as recited in claims 67-77 and the prior art relied upon by the Office Action. This final rejection being in error, therefore it is respectfully requested that this Honorable Board of Patent Appeals and Interferences reverse the Examiner's decision in this case and indicate the allowability of claims 67-77.

Respectfully submitted,



Robert K. Carpenter
Registration No. 34,794
Attorney for Appellants

Customer No. 004372
ARENT FOX PLLC
1050 Connecticut Avenue, N.W.,
Suite 400
Washington, D.C. 20036-5339
Tel: (202) 857-6000
Fax: (202) 638-4810